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EDITORIAL NOTES

FUEL NEEDS OF CARBONIZING PLANT

IT is nearly twenty years since Mr. T. Hardie, with Dr. H. Hollings, instituted a scheme which made it possible for the manufacturing plant of the Gas Light and Coke Company to be studied very closely, the aim being to obtain data of such a comprehensive nature as to enable accurate assessment of the progress or otherwise in plant design. As a result of this enlightened decision a vast amount of data and information has been accumulated. The investigations have covered every type of carbonizing plant; during them the plant has been under the immediate control of the works staff and has been operated as normally and to the best advantage. Throughout, Dr. S. Pexton has been associated with this work and has had opportunity, facilities, and experience of a unique order. Last Friday, to the London and Southern District Junior Gas Association, he gave an extremely able and significant Paper co-ordinating information obtained during this long period on the fuel consumption of the different carbonizing systems. The subject is obviously of great importance both economically and scientifically, and his contribution to current knowledge of carbonization was characterized by penetrating analysis, original thought, and conclusions of a definite and, we think, quite startling kind. These conclusions were simply expressed and the arguments advanced with great clarity. We hope later to do full justice to this Paper, which appears to us outstanding; in the meantime we will content ourselves with a somewhat cursory consideration of a few of the fundamental issues raised, which are of first concern alike to operator and designer of carbonizing plant. They bear immediately on our conceptions of carbonization as the best and most economical ("economical" in the widest sense) treatment of our indigenous fuel resources.

The most economical use of fuel on gas-works is a subject of vital interest to the Gas Industry. Apart from the cost of coal, fuel for heating retorts and for steam raising is probably the highest item of expenditure in gas-works cost. In his widely quoted Paper, "Perspective in Carbonizing Costs," Mr. F. B. Richards stated in 1934 ("JOURNAL" of Oct. 31 of that year) that for continuous vertical retorts, 25% more producer fuel is equivalent to 77% extra labour or 26% more capital expended. This statement was made eight years ago; but the present position and future trends are probably such that closer attention to fuel economy will be more amply rewarded.

Let us turn for a moment to the scientific aspect. Scientifically the subject of fuel economy in relation to coal carbonization is of fundamental importance, and in his Paper Dr. Pexton set out a new approach to the definition and determination of the thermal efficiency of gas production—"gas production," be it noted, free from any confusion of thought on previous definitions of the thermal efficiency of carbonization. By the carbonizing process, coal is converted into gas, tar, and coke the combined thermal values of which are substantially equal to that of the coal. To exemplify his argument Dr. Pexton took the figures obtained by Dr. F. J. Dent in a test on intermittent vertical plant at Croydon and recorded in the 32nd Report of the Gas Investigation Committee. The five main figures were as follows: Therms in 1 ton of coal, 311.7. On carbonization, therms in gas, 78.7; therms in coke for sale, 162.8; therms in tar, &c., 26.0; therms in fuel to producers, 37.7. The efficiency of gas production as defined by Clerk, Smithells, and Cobb is obtained by dividing the therms in gas by the difference between the therms in the coal and the therms in the coke and tar. This will be seen to be $\frac{78.7}{122.9}$, and the answer, the thermal efficiency of gas production, is 64%.

Dr. Pexton, however, took the matter a step further. The difference between 122.9 and 78.7 is 44.2—of which 37.7 is fuel to producers and 6.5 is loss due to retort scurf, &c. To make 78.7 therms of gas has thus involved the consumption of 37.7 therms of producer fuel, and in addition the loss of 6.5 therms as wastage by retort carbon, combustion of incandescent coke before quenching, leakage of gas into combustion chambers, &c. He put forward an alternative method of arriving at the same figure for the thermal efficiency of gas production—to divide the number of therms in the gas, 78.7, by the sum of the therms in gas, in producer fuel, and in wastage. The calculation involved is $\frac{78.7}{78.7 + 37.7 + 6.5} = \frac{78.7}{122.9}$, and the answer, as before, is 64%.

Appreciation of the foregoing concept of the efficiency of gas production is, we think, an essential first step towards appreciation of Dr. Pexton's Paper as a whole and the methods by which that figure of 64% can be increased—and the increase, *which is within the bounds of practical possibility and politics*, would put the Gas Industry into an unassailable position in its process of translating the thermal energy of coal into a refined gaseous fuel on tap. We will try to picture in a few words what is involved in this aim, which we need not emphasize is of paramount importance. As we said previously, we are only taking a cursory glance at the Paper. The amount of fuel required by a carbonizing plant depends on half-a-dozen items: The losses entailed in making producer gas; the heat carried away by the waste gases after providing for recuperation or regeneration; the heat carried away by the products of carbonization (*i.e.*, the hot crude coal gas and the hot coke after recuperation of any of its sensible heat); the heat of production of the water gas, if the retorts are steamed; the heat of decomposition of the coal as affected by its type; and radiation and convection losses from the carbonizing plant. Dr. Pexton considered these items individually and then collectively, in the light of practically twenty years' experience on the lines we have mentioned, and finally indicated directions in which improvements might be obtained in practice to raise that thermal efficiency of gas production figure of 64%.

We will give some of his suggestions. First of all, in regard to coke ovens, a useful line would be to consider preheating the primary air to the producers by heat exchange with the hot gases leaving the producers—a system which was used in central Mond producer gas plants and accounted for about 5% fuel saving. We turn to continuous vertical retorts. The overall fuel economy of this system is highly favourable, but it is the opinion of the Author that the system probably offers the greatest scope for further improvement. It would appear that some 30% of the fuel burnt is associated with the radiation and convection losses from the setting. This, he said, is not because of the greater intrinsic heat loss per unit of surface compared with other carbonizing plants, but because of the high proportion of heat carried away by the waste gases which is only permissible on account of the small net heat requirements with this system of retorts. More heat insulation, he suggested, would be particularly profitable.

In addition, more cooling medium is required for further absorption of heat from the coke in the upper part of the ex-

tractor casing and the lower part of the retorts. Although the transfer of heat from a solid mass of coke through a partition wall is not easy, Dr. Pexton argued that it is well worth exploring, because the cooling of the coke by a further 200°C. (*i.e.*, from 650°C. to 450°C.) would probably reduce the fuel consumption by 15%. The only additional cooling medium available is the primary air to the producers. The adoption of pre-heating the primary air would mean abandoning the use of water on the producer bars and the substitution of steam addition to the primary air, otherwise the preheat of the primary air would merely evaporate water. The simplest arrangement of applying primary air to the cooling of the bottom of the retorts would probably be to reserve the producer side retorts for this purpose and to apply secondary air cooling to the non-producer side retorts. In this way all retort bottom ironwork, &c., would receive double the cooling medium compared with the present practice of using secondary air only. Moreover, the amenities of the retort house would be improved by concentrating upon these lines of further developments in fuel economy.

Coming to intermittent vertical retorts, Dr. Pexton said that in this instance considerable alteration in design would be required to effect substantial economy in fuel, that the only method available would seem to be an extension of the recuperator with the use of both primary and secondary air for cooling the waste gases. But in this way about 14% of the fuel might be saved. With horizontal retorts, the problem he considers is difficult and can only follow the same lines as for intermittent retorts, with the addition that greater insulation of the settings is worthy of consideration.

In this outline we hope that we have stimulated interest in a contribution to which, as we have said, we will endeavour to do justice later. We have not mentioned anything about the meeting apart from the fact that it was a gathering of "Juniors"—and it was a very full gathering, with not a few "Seniors" present and others well known on the "contracting side." We doubt whether the Author of the Paper, which, by the way, he did not read in any formal sense, could have had a more appreciative audience or one keener or more, shall we say, sincere. We regard the keenness displayed at this wartime meeting as cause for much optimism, amid the greyness of current conditions, concerning the future of our Industry, with such a large proportion of its trained technical personnel keyed-up to effort and—or so it seemed to us—with each individual really anxious to add to the common pool of knowledge. We conclude our note on the Paper with these remarks of the Author in introducing it; we think we transcribe them substantially accurately: "Too often it is not appreciated that the works staff is making the best of imperfect apparatus. The Industry has been well served by the plant manufacturers, and in the light of accumulated data will be even better served in the future if any deficiencies revealed by long experience are frankly recognized and tackled on the basis of all the available evidence." If the spirit of these remarks is appreciated, as we believe it will be, we look forward confidently.

HOME SERVICE

At the moment about five and a half million women are on full-time work in war factories and about 76,000 are in the Services; we have no reason for supposing that these numbers are likely to decrease. Housewives who remain as housewives have no light burdens to shoulder and they have to spend a considerable amount of time in providing food, which may or may not be classed as "unproductive" time. Obviously "set" demonstrations in the showrooms of gas undertakings have declined. Demonstrators have joined the Women's Services; some have been directed to war workers' canteens as organizers; it is not easy and we think it will become more difficult to find qualified personnel. In the more vulnerable areas demonstrations have been discontinued; some demonstration premises have been destroyed; one gas showroom has been converted to a mortuary. It can be argued that women who remain idle in present circumstances are not the type likely to benefit from or be interested in cookery demonstrations. Last week we heard it suggested that those who attended demonstrations in one town were "regulars" who found the seats comfortable.

We think it will be agreed that in peacetime demonstrations were useful. They were an important part of a development of comparatively recent years which had shown increasing worth—Home Service. In wartime, Home Service has proved invaluable, and it would be a thousand pities if decline in the value of set demonstrations was to influence any gas undertaking in its view of the value of Home Service as a whole in changed circumstances. As a matter of fact we do not believe that gas undertakings have in general lost confidence in the worth of this service as an integral part of their organization. Rather do we think that interest in the service as a medium for the promotion of good relations with consumers is more widespread now than before the war. There is, we think, every reason for this; the matter is really one of adaptation. Home Service work during war is becoming more and more advisory. It comprises all manner of methods of helping and educating the domestic gas consumer, and no undertaking, we suggest, ought to ignore this type of help. Home Service does not begin and end with demonstrations; and we think it fortunate for the public that they are able to go to gas showrooms for advice. We also regard it as fortunate for gas undertakings that they themselves can seek and obtain assistance from the British Commercial Gas Association, which has made available many forms of practical help which we need not detail here. The aim of making gas showrooms into information bureaux on a wide range of problems with which the housewife has to deal is admirable; it is building up goodwill on a very sound basis. And through the B.C.G.A., the means are at hand.

Coke Supplies

Coke supplies in most parts of the country are such that the acquisition of further allowances for winter stocking may be allowed, but it is desirable for such stocks to be distributed in the near future in order to relieve pressure on local transport during the winter. Under present restrictions, coke, and certain sizes of anthracite of which merchants have the details, may be acquired without licence up to a maximum stock of 3 tons. This limit will remain in force, but instructions have been given to Local Fuel Overseers that, where the supply position permits, stocking of these fuels up to 5 tons shall be permitted by licence in the case of consumers who are prepared to give a written undertaking that they will conserve their stocks with the most rigid economy, and will draw on them during the period from January to March without acquiring further supplies. People who do not normally use coke are urged to take it for the purpose of ekeing out their coal.

Directorate of Gas Supply

A consultative committee has been formed by the Gas Directorate of the Gas and Electricity Division of the Ministry of Fuel and Power to see, on behalf of the Ministry, that the minimum quantities of coal, oil, and coke are being used to secure the required outputs. We anticipate that the Committee will work as far as possible through already existing regional organizations within the Industry. The members are F. M. Birks, T. F. E. Rhead, T. S. Cheetham, and T. C. Finlayson. The first meeting is to be held next Tuesday, Oct. 27.

Personal

As announced in the "JOURNAL" last week, Mr. W. H. JOHNS, for 23 years Engineer and Manager of Swansea Gas Light Company, has retired on medical advice, because of ill-health, after having been in the Gas Industry all his working life. Till Dec. 31, when the arrangement comes into effect, he is on sick leave. Mr. Johns designed and supervised the construction of the Company's new works at Morriston, which, when opened in 1924, were the largest erected in South Wales for a considerable period.

Before going to Swansea he was Chief Engineer to the Sheffield Gas Company, and previously Gas Engineer to West Bromwich Corporation. He began his career with contractors who specialized in gas-works construction, and was successively an assistant to the Bath Gas Company, in charge of one of Birmingham Corporation's Gas Works, and Gas and Electrical Engineer at Malvern, before going to

West Bromwich. He was President of South Wales and Monmouthshire Gas Engineers and Managers, and Chairman of South Wales branch of the Institution of Mechanical Engineers until he resigned recently, and has given Papers to both.

Two sons who began their career with him in Swansea hold posts in the Gas Industry. Mr. W. H. T. Johns is Engineer and General Manager of Rotherham Corporation Gas Undertaking, and Mr. F. Stuart Johns is Assistant Engineer of the Gas Undertaking at Wellington, Shropshire.

It was also announced last week that Mr. ERNEST ABLETT had been appointed Engineer, Manager, and Secretary of the Swansea Company. Mr. Ablett, who was educated at Queen Elizabeth's Grammar School, Wakefield, and Leeds University, was an articled pupil to the Rotherham Gas Department from 1904 to 1908, from which year till 1914 he was Assistant Engineer. In 1914 he was appointed to the Swansea Company, becoming Assistant Engineer in 1915 and Secretary and Assistant Engineer in 1919.

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Colonel G. S. EUNSON, T.D., D.L., Managing Director of the Northampton Gaslight Company, has been elected Chairman of Directors in the place of the late Mr. John Martin. Colonel Eunson started work with the Company in 1883 as a pupil under his father, Mr. John Eunson, and has been with it ever since. He was appointed Engineer and Manager on the death of Mr. John Eunson in 1911, and was made a Director of the Company in 1935.

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Mr. F. W. SANSOM, of the Exeter Gaslight & Coke Company, has been awarded the M.B.E. for his work during and after the heavy enemy air attacks on Exeter in April and May last.

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As we go to Press we learn that Mr. SAMUEL TAGG, Managing Director and Engineer of the Preston Gas Company, has resigned the position of Engineer, to which he was appointed in 1908.

Mr. A. K. COLLINGE, Assistant Engineer, has been appointed Engineer. * * *

Mr. E. T. HARRISON, Manager and Secretary of the Lutterworth Gas-Light and Coke Company Ltd., has been appointed a Director. Mr. Harrison has been with the Company 30 years, first as Manager, and during the last 17 years as Secretary also. He has seen more than a fourfold increase in the Company's make.

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Mr. E. H. CHAPELOW, the Sales Manager of the City of Durham Gas Company, has completed 50 years' service with the Company. The occasion was marked by a presentation ceremony when the Chairman of the Company, Alderman T. W. Holiday, presented Mr. Chapelow with a cheque and spoke in high terms of his services.

Obituary

R. W. Hunter

We announce with regret the death of Mr. R. W. HUNTER, M.Inst C.E., on Oct. 11, at the age of 60. Mr. Hunter, who had been Chief Engineer to the Gas Light and Coke Company for five years, retired from that position at the end of 1940. He was succeeded by Mr. F. M. Birks, O.B.E.

Mr. Hunter began his career in the Gas Industry nearly 45 years ago as a pupil of his father, the late Robert Hunter, Engineer and Manager of the Chester United Gas Company, In 1902 he was appointed an Engineer Staff Pupil to the Gas Light and Coke Company and remained with the Company until his retirement.

During the Great War Mr. Hunter served in France and Flanders from 1914 until 1918, when he was invalided out with the rank of Captain. He was a member of the National Joint Industrial Council, and of numerous Committees connected with the Industry. He was also a member of Council and Junior Vice-President of The Institution of Gas Engineers, having joined the old Gas Institute as an Associate Member in 1900. In 1933 Mr. Hunter was awarded the H. E. Jones Gold Medal for a Paper on the Coke Oven Plant at Beckton.

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Mr. THOMAS GEORGE BROOKS died on Oct. 19, aged 62, at St. Anthony's Hospital, North Cheam, after a brief illness, although he had been in indifferent health for some time and his condition had given rise to anxiety on the part of his family. His connexion with the firm of Thomas Potterton extended throughout his commercial life, and upon the formation of Thomas Potterton (Heating Engineers), Ltd., in 1928 he was appointed joint Works Manager with his brother, Mr. Frederick Brooks. His close association with the company dates back more than 40 years, and when the late Mr. Thomas Potterton diverted his attention from solid fuel apparatus to gas firing, Mr. Brooks assisted him in his early experiments, which soon developed into research with valuable results. He was responsible for the installation of important schemes in gas engineering as well as in process plants throughout the country, and his manifold services to the Gas Industry were widely recognized. He leaves a wife and two daughters. * * *

The death has occurred of Mr. SANDFORD ROBINSON, eldest son of the founder, and for many years the Chairman of J. H. Robinson & Co. (Liverpool), Ltd., to which firm he has devoted the whole energies of a strenuous life. He was also a Director of United Gas Industries, Ltd.

Letters to the Editor

I.G.E. Report on Gas Quality

DEAR SIR,—In the issue of the "GAS JOURNAL" of Oct. 7 I read with some interest the Report of the Committee of Enquiry on Gas Quality, together with your own comments on the same subject.

The choice of the comparative, instead of the superlative, or even the positive adjective, is surely rather unfortunate in the framing of the second recommendation that "in each undertaking there is pressing need for a *stricter* control of gas quality and of distribution practice."

The need for rigid maintenance of calorific value, specific gravity, and pressure, within the closest practicable limits is emphasized, and to this end tolerances of $\pm 5\%$, $\pm 10\%$, and ± 1 in. W.G. respectively are considered permissible, or in your own words sufficient to produce "a remarkable raising of the standard of gas supply in very many areas."

The only remarkable effect of this third recommendation will surely be one of wonderment as to what the Committee found to be the existing tolerances in the factors determining gas quality.

From some knowledge of Scottish practice, I feel bound to infer that the Committee's enquiries did not lead them "over the Borders," where it might safely be considered against human nature to err knowingly $+5\%$ with calorific value, and where I feel sure the existing indulgence of -5% is seldom, if ever, practised.

In this connexion the Committee might with advantage have reviewed the number of official tests for calorific value. Take, for example, the hypothetical and extreme case of an undertaking having only one official test per quarter. Until that test is made, a considerable number of therms would no doubt be given away gratuitously, "in order to be on the safe side." Since the test itself represents the "quality" for the whole of the period, it would be reasonable to suppose that, between the official test and the beginning of the new quarter, an effort would be made to recover the lost therms.

It is not unknown, I understand, for some undertakings to be forewarned well in advance of the visit of the official examiner. Obviously an official recorder would be of much more importance than the mere appointment of spot test examiners.

Again, the punitive measures for those exceeding the existing permissible tolerance with calorific value are rather ridiculous, particularly in the case of non-profit municipally owned undertakings, and in consequence recommendations should rather vizualize the strictest practicable control of all the factors comprising gas quality, provided a common-sense view is taken when unfortunate contingencies do occasionally occur.

The will for better things is inherent among most employees within the Industry, and it is only limitations of finance, staff, and appliances that make possibilities impossibilities.

On the other hand, when the gas is officially tested each day, the law of averages is of great assistance, and for that reason, at the end of the quarter, the average calorific value of a gas undertaking so happily placed with a daily official test should seldom, if ever, vary more than $+0.05\%$, far less $\pm 5.0\%$. In the case of an undertaking having a dozen tests per quarter, the variation might rise to a maximum of $+1\%$. These are, of course, averages at the end of a quarter, and the Committee may have had spot tests in mind. Even so, and despite war conditions, I doubt very much if, in the majority of Scottish undertakings, 3% is exceeded on the worst of occasions.

Similarly, the tolerance of 10% on the figure representing specific gravity seems rather excessive, while the permissible variation of pressure of $+$ or $-$ 1 in. W.G. seems almost like a Charter of Licence, in so far as the possible "closest practicable limits" are concerned.

The average Scottish practice is, I imagine, a continuous pressure of 4 in. W.G. in the road mains. A short period variation of $\frac{1}{4}$ in. W.G. from this continuous pressure line would cause grave consideration, and a drop of $\frac{1}{2}$ in. W.G. would surely give rise to remedial action.

The choice of a 4 in. minimum W.G. pressure may be partly due to the general lower average of calorific values in Scotland, in conjunction perhaps with the rapid development of gas sales compared with the size of service pipes to, and carcassing within, older property.

At the inlet to meters the pressure might vary from house to house, or, for that matter, from tenant to tenant, since there are innumerable local factors coming into play—*e.g.*, partially choked services, condensation, stiff or bound meters, &c. These are, of course, ephemeral troubles which cannot be avoided from time to time in a healthily developing undertaking, which would be continually replacing, enlarging, or clearing the service pipes between the mains and the meters, with the sole object of maintaining at all meters the same pressure as is continuously present in the main pipes. By far the majority of premises would at all times, however, have the same pressure at the meter inlet as is present in the main pipes.

The Committee apparently gave no consideration to "dryness" as a factor determining the performance of gas in combustion.

In conclusion, I am sure it will be agreed that the report is a most praiseworthy *résumé* of existing practice, and, as such, might well be considered a basis for some really ambitious recommendations. It may be that the Committee deemed it desirable to be charitable, and to allow a good margin for occasional lapses. Certainly if it has been

found that consumers are not noticeably affected by variations within the existing tolerances, then it would indeed be farcical to impose unnecessary burdens upon gas engineers and their staffs. The general trend of the report, however, would seem to indicate that in many quarters some of the fundamental necessities of the science and practice of gas manufacture and supply have been given too little attention.

Gas Department,
Perth.
Oct. 16, 1942.

Yours faithfully,
W. NICOL BAIRD,
Engineer and Manager.

DEAR SIR,—I do not often dispute the conclusions in your editorial notes or venture to criticize a Committee Report of The Institution of Gas Engineers, but I feel I cannot allow your acceptance of the Report and its recommendations and conclusions to pass without comment.

It is presumed that the report has been printed in full, and if so its value has been reduced by the omission of the supporting evidence to justify the tolerances suggested in Recommendation Three. The sentiments expressed in the body of the report are admirable, but for the Committee to be "convinced that with the supply of gas of *unvarying* quality, *sensibly constant* in calorific value, specific gravity, and pressure of supply, and free from objectionable impurities, the need for a large proportion of present-day maintenance would automatically disappear," and then to recommend tolerances of $\pm 5\%$ in calorific value, $\pm 10\%$ in specific gravity, and ± 1 in. in pressure at the consumer's meter is, to my mind, a contradiction between precept and practice.

One can only infer that the Committee have evidence that greater variations and tolerances exist in the supply of gas normally delivered to the consumer, and that the adoption of this recommendation will result in a great improvement. If this inference is correct it will be disputed by many gas engineers who have provided a gas supply of "straight line" quality. Hesitation to participate in interlinking schemes is bound to be shown if the supply to be provided departs so widely from the standards hitherto adopted voluntarily, unless further evidence is produced to show that gases of 425, 450, and 475 B.Th.U. quality are so readily interchangeable.

I feel that the recommendation in the report regarding tolerances in quality fall so far short of those set and realized in many undertakings that some further explanation of the grounds on which these are based is called for.

15, Calton Hill,
Edinburgh.
Oct. 13, 1942.

Yours faithfully,
D. D. MELVIN.

DEAR SIR,—I have read with much interest the Report of the Committee of Enquiry on Gas Quality published in your issue of Oct. 7. In my opinion the report is an excellent one; commendably short, yet covering all the essential features of the subject.

The only adverse criticism I have to offer is to remark on the wide tolerances suggested for calorific value, specific gravity, and pressure, which appear to me to be very much greater than obtain in present-day practice.

Assuming a gas appliance requires an input of 10,000 B.Th.U. for correct operation, and calculating the B.Th.U. input at the extremes of the suggested allowable range, we get 7,400 and 12,800 for minimum and maximum respectively.

These figures represent changes of *minus* 26% and *plus* 28% on the original B.Th.U. input, which would appear to be definitely unsatisfactory to the consumer.

Oct. 15, 1942.

Yours faithfully,
"ENQUIRING STUDENT."

Women "Fuel Wardens"—appointed from the staff—made their appearance in every Lyons' Teashop on Thursday of last week. Wearing yellow armlets lettered "fuel warden," they have the right to turn off any light or stop any use of fuel which they consider unnecessary. Every week they will tell the rest of the staff in the teashop how many units of electricity, cubic feet of gas, and pounds of coal and coke have been used, and how much has been saved on the previous week's figures. National Savings certificates and stamps will be awarded to the staff in the three teashops showing the greatest fuel economy.

Greenock has set up a new record for collections at the "R.A.F. in Action" Exhibition on behalf of the R.A.F. Benevolent Fund. When the exhibition in the Gas Showrooms closed on Sunday last the public in the district had contributed £121. This, with a donation of £5 from the A.T.C., made a total of £126, beating the previous record, held by London, by over £10.

The Maidstone Gas Company in conjunction with the Maidstone Water Works Company, the Corporation Electricity Department, and the Coal Merchants, are to hold a "Battle for Fuel" Exhibition, under the patronage of the Mayor of Maidstone, from Saturday, Nov. 7, to Saturday, Nov. 14.

The Eastern Counties Gas Engineers' and Managers' Association will hold their Autumn Meeting at Gas Industry House on Friday, Nov. 13.

National Gas Council

A Meeting of the Central Executive Board of the Council was held on Oct. 13, the Chair being taken by Sir David Milne-Watson, Bart., LL.D., D.L.

The Chairman, on behalf of the Board, welcomed Mr. C. M. Croft, D.L., J.P., who had been co-opted at the previous meeting.

It was reported that Mr. W. H. Johns, who had been a member of the Board since its inception in 1919, was retiring on account of ill-health. It was unanimously agreed to convey to Mr. Johns the appreciation of the Board for his past services and their regret that these should have to be terminated.

A report was received with regard to coal supplies.

It was reported that on Sept. 9 there had been a further meeting between Sir Alan Anderson, the Controller of Railways, representatives of the Ministry of Fuel and Power and the Railway Companies, and the Conjoint Conference Demurrage Committee. At the former meeting, Sir Alan Anderson had urged that some settlement should be made with regard to the prolonged dispute in connexion with the demurrage claims made by the Railway Companies in respect of coal wagons, and the Demurrage Committee of the Conjoint Conference had been enlarged in order to effect a settlement of the matter. The Demurrage Committee had placed before the Central Executive Board of the National Gas Council at the meeting in August certain suggestions for a settlement of the dispute and had been authorized to negotiate a settlement on that basis. At the meeting on Sept. 9 a settlement was arrived at on the understanding that the Conjoint Conference, through its associated members, should endeavour to obtain its loyal acceptance by public utility undertakers throughout the country.

It was reported that the Council had approached the appropriate Government Departments with regard to the development of gas supply for transport purposes, and the position now was that undertakings would be entitled to supply gas in respect of vehicles converted before Sept. 1, 1942, provided the owners of the vehicles had satisfied the Ministry of War Transport that the vehicles were being used for essential national purposes. A licence to this effect must be obtained by the owners of the vehicles from the Regional Transport Commissioner. After Sept. 1 the conversion of vehicles to gas propulsion would only be allowed in a few exceptional cases, and only certain gas-works would be entitled to supply fuel to such vehicles. The Ministry had supplied a list of gas-works entitled to supply fuel in such cases, and these were restricted to undertakers receiving coke oven gas where it was known that there was a surplus of such coke oven gas.

It was reported that certain evidence designed to show the success of the Fuel Economy Campaign was at present being obtained by the National Gas and Electricity Committee. Reference was made to the Fuel Efficiency Bulletin No. 5, issued by the Ministry of Fuel and Power to all gas undertakings, and which the Board had already agreed should be circulated. It was pointed out that the Bulletin was for the use of operators in factories, and that copies for this purpose were available on application to the Industrial Gas Information Bureau.

The following representatives were re-elected to serve on the Council of the British Gas Federation for the year 1943, as representing the National Gas Council: Mr. J. R. Bradshaw, Mr. C. S. Shapley, Mr. A. W. Smith, and Sir David Milne-Watson. Mr. Frank Jones (Vice-Chairman) was appointed to fill the vacancy caused by the resignation of Mr. William Cash.

It was agreed that the next meeting of the Board should take place on Tuesday, Nov. 10.

Yorkshire Junior Gas Association

The 37th Annual General Meeting of the Yorkshire Junior Gas Association took place on Oct. 3, at Leeds, under the retiring Presidency of Mr. T. G. LEWIS (Leeds).

Mr. C. S. SHAPLEY, Engineer and General Manager of Leeds Gas Department, congratulated the Association on resuming a full session of activities in spite of difficulties. Referring to the voluntary fuel economy campaign, he said that they in the Leeds Gas Department had instructed their meter inspectors to advise consumers when they found they were exceeding their last year's consumption. They had already interviewed some 1,200 consumers who had exceeded that consumption, and had found that 50% of them used more gas because they were concentrating on saving coal in response to the widespread publicity about coal, and a further 11% were using more gas because they had been unable to get coal.

The annual report of the Hon. Secretary (Mr. G. E. Banks) and the Council recorded that during the period since the last annual general meeting in January, 1940 (the 1941 meeting having been missed owing to war conditions), the following awards had been made to members of the Yorkshire Association: The Institution Bronze Medal to Mr. S. H. Stokes for his Paper, "Economic Utilization of Unscreened Coke Breeze"; the Silver Medal of the Society of British Gas Industries to Mr. L. W. Roberts for Paper, "Some Experiences in Laying the West Yorkshire Gas Grid"; and to Mr. D. G. Gunn for "Gas and the Internal Combustion Engine"; the Clayton Medal (given by Messrs. Clayton, Sons & Co., Ltd.) to Mr. R. Anderson for "Gas Fired Heating Plants and Installations at Bradford"; to Mr. S. H. Stokes for

"Economic Utilization of Unscreened Coke Breeze"; and for the past year to Mr. J. Castle for "Practical and Economic Aspects of Waste-Heat Recovery on an Existing Horizontal Setting"; and Mr. R. N. Webb's prize to Mr. J. Hargreaves for his short Paper on "Foundations."

The PRESIDENT, formally moving adoption of the Report, expressed the Association's sense of deep loss by the death of Mr. J. Bridge, Gas Engineer at Elland and a stalwart supporter of the Yorkshire Junior Association; Mr. J. W. Horwill, of Bradford, another past-President; and Mr. E. D. Foster, of Rotherham, who had given his life for his country in the R.A.F.

Mr. F. Beaumont, of Huddersfield and Meltham Gas Departments, was then inducted by Mr. Lewis as the Association's new President, who paid tribute to the active part his successor had played in the Association's work and discussions over many years.

Mr. BEAUMONT, thanking the meeting for the honour done him, spoke of the work of Mr. Lewis in the Presidency during two years of exceptional difficulty when it was impossible for the Association to plan very much in advance.

Other officers elected were: *Senior Vice-President*, Mr. A. Pickard (Knottingley); *Junior Vice-President*, Mr. V. J. J. Siddons (Rawmarsh); *Hon. Treasurer*, Mr. J. Hargreaves (Bradford); *Hon. Secretary*, Mr. G. E. Banks (Sheffield); *Members of Council*, Messrs. C. A. Newham (Leeds), A. Wilkinson (Huddersfield) and S. Davies (Sheffield) for three years, and Mr. W. T. Hird (Sheffield), two years; *Representatives on District Education Committee*, Messrs. A. H. Clucas (Leeds), G. Griffiths (Bradford), A. Pickard (Knottingley) and Dr. H. A. Fells (Sheffield); *Hon. Auditors*, Messrs. A. W. Arnold and J. R. Firth (Bradford).

Mr. L. HARTLEY, of Messrs. Clayton, Sons & Co., presented the past year's Clayton Award to Mr. J. Castle, formerly of Brighouse and now Engineer at Leyland.

Mr. F. Beaumont then delivered his Presidential Address, in which he referred to works developments undertaken since the last War by the Huddersfield Gas Department.

Mr. B. THORPE (Sheffield) moved and Mr. C. A. NEWHAM (Leeds) seconded a vote of thanks to Mr. Beaumont.

"UNITY IN DIVERSITY"*

By W. M. SELVEY

IN my last Address one of my main themes was how certain "syntheses" came about by the work of numerous "cells" concentrating on a given problem, and which attained a measure of success by their very intensity. I would now suggest that the work of a Council is "glandular," if one does not push the analogy too far. At the same time the underlying unity in process between many biological functions and movements in the body politic is a theme which has been little explored, mainly due to the planned divorce in the early days between the intense materialistic outlook of early science and the political and metaphysical fields of thought on which I commented last year.

Speaking quite broadly and with no attempt at biological accuracy, the glandular function is that of collecting together in a certain unity the operations of a number of diverse action cells and the production of some fluid which is injected into the life stream for the benefit of all the other cells of the cosmos.

Our own Council in this respect has a somewhat special function. Other Councils are mainly composed of minds dealing with some special form of activity, and their members are mutually and often highly competitive in that field. Our own Council has to deal with what are almost competitive industries, and one therefore has to go behind the outward face of those industries to find the unifying principle. My view of it is that they are deeply conscious, often more than they realize, of the mystery hidden behind the word "fire," one of the primary elements of ancient thought, often worshipped under the guise of the sun or some sacred flame. This may seem just nonsense to the unreflecting mind, but let such a one think at leisure as to what fire, with its manifestation flame, has meant to mankind and to his own industry.

Leaving that aspect and returning to particulars, the function of the Council is to achieve "Unity in Diversity." This is a big saying in a few words.

Let us for a moment consider rival ideas. What is pressing most on the world just now is, I think, the false idea of "Unity in Uniformity." Some would immediately say: Oh! that means filling in forms; but while there is some point in this, those who would govern by this thesis do automatically find themselves enemies of all diversity, and it is a short and logical step to try to eliminate the diversities by force. Quite apart from the utter impossibility of ever achieving unity by such methods, what pleasure could there ever be to the proponents of such ideas could their efforts meet with complete success? Many would commit suicide from sheer boredom. Nevertheless, there is far too much of this spirit even in the most liberal forms of government. The practitioners start on this path, often only because they wish to save themselves trouble, but they often harden their hearts as they go on, finding that life always beats them in the end. "Our little systems have their day, they have their day and cease to be."

But there is another rival system for which there is no neat label. May I call it "Unity in Indifference"? Recall such expressions as "*Laisser-faire*," "Am I my brother's keeper?" "Mind your own business," and so on. These are to-day almost bankrupt ideas. The man who really minds his own business finds out sooner or later that his business is concerned with all mankind. The man who repudiates the idea that he is his brother's keeper comes ultimately to the facts of poverty, disease, and war. The scientist who takes up some narrow branch of enquiry finds that he requires all knowledge to solve any problem. So let us return to our original theme of "Unity in Diversity." It must be frankly acknowledged that "Diversity" is in its ultimate nature "Good." Only by diversity is consciousness possible. Those who therefore come together to form any Council must bring their own personal contribution, but also be humbly conscious that it is but a few wavelengths in the continuous spectrum of Truth, and by over-emphasis a line spectrum will be produced. Their object must be as far as possible to produce a pure white light by a harmonious combination of all wavelengths.

With a few others, I have been continuously on the Council of the Institute from the beginning, except for an interval of two years. Some affect to think that Councils should change their membership frequently and drastically. There is little to commend this idea to those who by constant attention to its affairs know better how to appraise the value of continuity. It is not possible even to keep the Council membership constant, leave alone "static." That word is the negation of all truth. Nothing can be static. The word represents a purely mental abstraction. What really has happened is that many eminent men, good friends of the Institute, have borrowed time from their other activities to give a helping hand, and then have found themselves compelled to leave others to carry on the work.

Just one more practical point as to the working of a Council. Its success depends very largely on the effectiveness of its committees. The work of a committee is, as a rule, private, and therefore differences can be canvassed freely without any thought of playing to the gallery or any other form of publicity. There is a sharp distinction in my own mind between the work of the Committees and that of the Council as a whole.

No Council can be effective if it attempts to do committee work. Its object is to deal with broad issues, and to watch how they affect the whole body of members. It is very seldom that the older and more experienced members of a Council find it necessary to remind recruits of this matter.

It should be, and it is, a desirable ambition to attain Council membership, but let each member-to-be think rather on what contribution he can bring when he is called to the Council table.

It would hardly be possible to pass over the events of the year without welcoming the formation of the Ministry of Fuel and Power.

Although a war foundation, and already highly political in its activities, we should bear in mind the necessity of which I wrote in my last Address of divorcing purely technical and economic problems from "emotion." While some emotion is necessary in the application of rules to contrary personalities, it is a bad guide to ascertaining basic facts on which to base such rules.

Out of the welter of war conditions much will be learnt and discovered of great use for the future, and we are glad to note the part that members of the Institute are taking in this work.

After the war they will be able to return to the active work of the Institute enriched with many unforgettable experiences.

* From the Presidential Address to the Institute of Fuel, Oct. 13.

An Exhibition on Fuel Saving was opened by Lady Fletcher, on behalf of the Ministry of Fuel and Power, at 21, North End, Croydon, on Oct. 17.

The Next Meeting of the members of the Fuel Luncheon Club will be held at the Connaught Rooms, Great Queen Street, W.C. 2, on Oct. 28 at 12.40 for 1.10 p.m., when the President, Sir David Milne-Watson, Bart., will give his Presidential Address. The cost of the luncheon to non-members will be 7s., and any such visitor wishing to be present is asked to forward his remittance to the Secretary of the Club, 30, Bramham Gardens, S.W. 5.

The British Standards Institution has now issued a range of 11 Camouflage Colours (B.S. 987C) which have been approved by the Ministry of Supply. The specimens contained therein are 2 in. by 3 in. and have shade numbers by which they will be known. Copies of this publication (B.S. 987C) may be obtained from the British Standards Institution, 28, Victoria Street, S.W. 1, price 1s. 6d. (1s. 9d. post free).

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

COKE QUALITY

REPORT OF THE I.G.E. COMMITTEE OF ENQUIRY

PART I.—SIZING OF COKE

THE Council of The Institution of Gas Engineers appointed, on July 30, 1941, *inter alia*, the Committee of Enquiry on Coke Quality with the following terms of reference: "To enquire into and make recommendations on coke grading and on the properties of coke in relation to its domestic and industrial utilization." The Committee now submits Part I of its Report on Sizing of Coke. It proposes to deal with other factors involved in the combustion of coke at some future date. In this Report, "coke" refers to all coke made by the Gas Industry other than that made in coke ovens.

The Report is divided into three sections: (*a*) Introduction; (*b*) Review of Evidence; (*c*) Conclusions and Recommendations.

(a) Introduction

In discussing its terms of reference the Committee decided that it was first of all important to consider the possible development which might occur in gas manufacture practice as the result of research which is at present taking place in connexion with complete gasification. As a result of this consideration, the Committee is of the opinion that for some time to come the policy of the Gas Industry will be to develop as a two-fuel industry, namely, gas and coke. There are many reasons for this, the most important being:

(i) It must be many years before the research now being conducted reaches such a stage that large scale complete gasification plants will replace present systems of carbonization.

(ii) It is unlikely that the British public will give up solid fuel fires unless compelled to do so.

The Committee considers that this question of the Gas Industry being a two-fuel industry should be stressed. There are still gas undertakings which are unconvinced that they can institute a vigorous coke-selling policy without upsetting gas sales. Coke is in some cases still looked upon as a residual and not as a processed fuel. The Committee considers that is is important to create the right atmosphere among gas coke producers, as without this it is difficult to convince consumers of the advantages of coke in those cases where solid fuel is preferred.

In reviewing the question in this way the Committee realizes that it is not possible in any way to be dogmatic on the question of coke production—such production varies owing to the types of coal carbonized, the type of carbonizing plant, and the declared calorific value of the gas supplied. But the important principle remains the same that, where coke is made, care should be taken in its production, so that it may be considered as a processed fuel and not merely a residual. The satisfactory performance of coke as a fuel depends upon sizing and upon other factors affecting combustibility, such as reactivity, physical structure, ash, and moisture. In this Report the word "reactivity" is used in relation to the performance of the coke substance in distinction to "combustibility," which is used in relation to the performance of the coke in bulk.

The Committee decided to concentrate its attention in the first place on coke sizing, taking as a basis of discussion the sizes standardized by the London and Counties Coke Association (see table of sizes in Recommendations) which covers the supply of nearly 4 million tons of coke per annum. The Gas Industry as a whole has been faced with the need to seek additional markets, more particularly since fluctuations in demand have reacted adversely on revenue obtained from coke. In certain parts of the country the domestic market offered a possible steady demand, but before the market could be developed it was necessary to prepare coke so that a uniform product could be offered to the consumer. The first step, therefore, was to arrange for correct sizing and grading of coke. The position obtaining in other parts of the country was more difficult owing to the competition from cheap coal and furnace coke. This has been borne out by the evidence submitted to the Committee showing that the demand for coke-burning appliances is greater in the South than in any other part of the country. Insufficient attention paid to the grading of coke, the competition from cheap coal, and the different methods of marketing small quantities of coal and coke have operated against the domestic use of coke.

The evidence submitted to the Committee has shown that the size limits of coke standardized by the London and Counties Coke Association meet with general agreement, and that no substantial variation is required in the limits of the respective sizes to ensure the satisfactory use of gas coke-burning appliances.

(b) Review of Evidence

1. Maintenance of Sizing.

Maintenance of correct sizing is essential in the supply of coke for use in domestic appliances. Lack of maintenance of sizing is a common fault and is a frequent source of complaint. It is important that sized coke should be re-screened (debreezed) at the point of loading in order to take out the fines caused by handling and storage.

2. Water Heating.

(a) *Central Heating Boilers.*—The witnesses agreed that all gas coke is a satisfactory fuel for solid fuel fired central heating boilers, the size of fuel used being related to the size of the boiler. The smaller the boiler the greater the need for careful selection of the correct size of fuel, except that large unbroken coke, which should be screened, is suitable for use in large hand-fired sectional boilers. For the correct operation of mechanical feeding systems of large central heating boilers, sized coke is necessary so that the rate of combustion can be adequately regulated whether combustion takes place in internal or external combustion chambers.

(b) *Domestic Hot Water Supply Boilers.*—During the past 20 years, in the Southern Counties and to a less extent in other parts of the country, there has been a radical change in methods of obtaining supplies of hot water. Formerly the coal-burning kitchen range with back boiler was the common means of heating water for domestic use; this type of appliance is being replaced by separate domestic hot water boilers which give constant supplies of hot water at low cost. These appliances have been installed in very large numbers, and the fact that they are generally in use all the year round means that there is a corresponding steady demand for suitable coke fuel for them. There have been difficulties in the operation of very small domestic boilers, as these require forcing in order to deliver the required output of hot water, resulting in clinkering trouble and the inability to keep fires alight throughout the night. These difficulties can be successfully overcome at very slight increase in capital cost by installing slightly larger boilers and, if necessary, correspondingly larger hot water cisterns, which should be properly lagged.

The Committee has received evidence which shows that within the size limits of No. 3, 1¼ in. to ½ in. (boiler coke nuts), a satisfactory fuel for use in these boilers can be prepared from most gas cokes, but that for the smallest size of boiler there should be a higher proportion of the smaller sizes of fuel. Alternatively the coke should be sized 1 in. to ½ in. or ⅜ in. There is a risk that this size may result in the fuel bed being too compact, with consequent liability to clinkering. For the next larger boiler the size might be 1¾ in. to ¾ in. There would be a practical objection to splitting the No. 3 size in this manner as it would mean an increase in the total number of sizes. It was therefore considered preferable that a higher proportion of the smaller sizes should be included in coke supplied for the smallest size of boiler. This sizing is inter-related with reactivity, which, in turn, is usually related to bulk density. High bulk density usually accompanies reduced reactivity, though this relationship is by no means inevitable. With less reactive cokes of high bulk density there should be a greater proportion of the smaller sizes, but with more reactive cokes of low bulk density there should be a greater proportion of the higher sizes.

3. Domestic Open Fires.

(a) *Specially Designed Open Coke Grates.*—While most gas coke, if sufficiently clean and moderately dry, can be used in open coke grates, the correct relationship between size and reactivity is of great importance. Evidence was submitted to show that with the more reactive cokes, sizes of 2 in. to 1 in. or 3¼ in. to 2¼ in. are satisfactory, but for less reactive cokes the sizing needs to be closer, 2 in. to 1 in. or even 1½ in. to 1 in. If a size of 2 in. to 1 in. were chosen it would be necessary to ensure that there was not more than 5% above or below these limits, since coke below the minimum would reduce the rate of kindling, while that above the minimum would reduce both the rate of kindling and the efficiency.

Where Durham or similar coals only are carbonized in horizontal retorts satisfactory coke for use in open coke grates can be produced by careful carbonization (avoiding "over-baking"), following by careful quenching and sizing.

(b) *Ordinary Coal Fire Grates.*—In the normal process of high temperature carbonization, coke is produced which is not usually satisfactory for burning in ordinary coal grates. Evidence has been submitted to the Committee to show that under special conditions it is possible to produce coke which is sufficiently reactive for use in ordinary coal grates.

4. Combustibility.

Evidence was received concerning the factors affecting combustibility. Combustion of coke will be dependent on such factors as reactivity, size, bulk density, ash and moisture content, and the type of appliance in which it is burnt. Ease of ignition is also extremely important to the consumer. No one factor, therefore, can be used as an index of combustibility, but the evidence indicated that the most satisfactory method of testing combustibility was by means of a practical test in an open coke grate under certain well-defined conditions.

5. Scotland.

The sizes of coke sold in Scotland agree generally with those of the London and Counties Coke Association, although in the No. 2 size there is an upper limit of 2¼ in.

Coke produced from coals normally carbonized in Scotland is suitable for use in domestic hot water supply boilers, which are more efficient than the old type back boilers.

For the open domestic coke fire more suitable coals than those usually carbonized would generally be required for the production of a satisfactory fuel.

(c) Conclusions and Recommendations

Conclusions.

The Committee concludes from the evidence that:

1. In general the London and Counties Coke Association sizes are suitable for use throughout the country.
2. In the smallest size of domestic hot water boiler a slight reduction of the lower limit or a reduction in the upper limit of No. 3 size is necessary in order to produce coke having a satisfactory slow rate of combustion during the night.
3. For specially designed domestic open coke grates, No. 2 size, within the limits 2 in. to 1 in., is normally suitable.
4. Where Durham or similar coals are used in vertical, intermittent or horizontal retorts, suitable conditions of carbonizing, quenching, and grading will produce a coke which can be used satisfactorily for domestic purposes.
5. Satisfactory combustion of coke is a function not only of size or reactivity, but of a combination of these and other factors. It has not yet been established that combustibility or "burnability" (as designated by one witness) of coke can be completely determined by a simple test and expressed by a number. This property can, however, be gauged to some extent by a simple combustion test in an open coke grate carried out under carefully standardized conditions.
6. Maintenance of uniformity of supplies in both size and quality is of the utmost importance to the consumer.
7. The No. 0 size domestic hot water supply boiler, with a fuel capacity of 0.49 cu.ft., is still on the small side, and it would be advantageous if this minimum fuel capacity could be increased. By using a slightly larger size of boiler the consumer would undoubtedly benefit in greater convenience due to better control of combustion and higher efficiency.
8. Coke produced by high-temperature carbonization is not usually suitable for burning in ordinary coal grates.

Recommendations.

The Committee recommends that:

1. All coke, for whatever purpose required, be screened before sale to the consumer.
2. The following numbered sizes of coke be adopted as standard throughout the country:

Number.	Sizes: Square Mesh Screens.
1	No upper limit over 1¾ in.
*1a	Within the limits 3½ in. to 1¾ in.
2	Within the limits 2 in. to 1 in.
3	Within the limits 1¼ in. to ½ in.
4	Within the limits ¾ in. to ⅜ in.
5	Unwashed fuel approximately ¾ in. to ¼ in. from which the fines up to ⅛ in. have been removed.

* Number 1a was added after the other sizes had become well established and renumbering would have caused confusion.

3. To facilitate coke marketing, coke sizes be known by the above numbers and not names.

H. C. Smith (*Chairman*).
W. L. Boon.
T. F. E. Rhead.
Samuel Tagg.

Appendix

Hard or Coke Oven Coke.

The Committee has received technical evidence regarding the behaviour of hard, or coke oven, coke in domestic appliances. Hard coke has a high bulk density and is less reactive than gas coke. One advantage of high bulk density is the greater weight of coke available for banking up an appliance at night. On the other hand it would be more difficult to keep a coke of size ¾ in. to 1¼ in. alight at a slow rate of combustion. This lower reactivity was also reflected in kindling, a greater volume of gas being required to ignite hard coke as compared with gas coke.

The London and Counties Coke Association No. 3 size for coke boiler nuts is also suitable for hard coke for use in domestic hot water supply boilers, provided about 25% of size ½ in. to ¾ in. is added to a ¾ in. to 1¼ in. size. With regard to the burning of hard coke in both domestic and large central-heating boilers, low reactivity could be compensated by careful selection of size, but where a more reactive coke is required for the open coke fire the reactivity is critical and cannot be entirely adjusted by alteration of size.

ORGANIZING A FUEL ECONOMY EXHIBITION

DISCUSSION BY THE EASTERN SECTION OF THE SOUTHERN ASSOCIATION

At Gas Industry House on Oct. 14 members of the Southern Association of Gas Engineers and Managers (Eastern Section) met to discuss the question of organizing fuel economy exhibitions, the discussion being opened by Mr. E. L. Nicholas, Managing Director and Engineer, and Mr. E. A. Smith, Distribution Engineer, of the Guildford Gas Light and Coke Company, who were first in the field with an exhibition of the kind. Mr. J. M. Webber, Chairman of the Section, presided.

Mr. **Smith,** in the course of his remarks, explained that the Guildford Fuel Economy Campaign was started by the Mayor, who sent a personal message to the residents by 20,000 letters. These asked the residents to reduce their fuel consumption by 25%, and on the bottom of each letter was a perforated tear-off slip which the resident was asked to sign and fill in the address and to return to the Municipal Offices or Gas Showrooms. The wording on the slip proved frightening to the public. It was this: "I hereby solemnly undertake to reduce my fuel consumption by one quarter." The return proved very disappointing.

It was, continued Mr. Smith, our endeavour to minimize expenditure. A very small amount of advertising consisted of 150 double-crown posters, cinema slides, but no Press announcements. We had the loan of two loud-speaker vans, one from the local police and one from the Ministry of Information, and these vehicles covered our area during the two days immediately preceding the opening of the exhibition. This form of announcement proved most effective and the hall was packed to capacity for the opening ceremony. We again resorted to the Ministry of Information van during the week, and our attendances throughout were remarkably good.

We had about a week in which to make our preparation. We obtained a hall in the middle of the town, and it was agreed between the gas and electricity undertakings that the British Commercial Gas Association should prepare a joint gas and electric stand. The solid fuel economy exhibit, which was very good, was supplied and erected by the Coal Utilization Joint Council. Their display was different in that they had tie-ups with solid fuel appliances showing various methods of saving fuel, whereas our stand only gave "the story" of economy.

The third display consisted of a series of Ministry of Information photographs showing various methods of fuel economy, and covered all fuels. A section of the floor space was devoted to fuel economy talks to housewives. A gas cooker and an electricity cooker were fixed. We had a trained demonstrator, who was kindly loaned to us by an associated undertaking, who spoke impartially on both fuels, and gave demonstrations.

Public address equipment, including a microphone, gramophone pick-up, and loud speakers inside and outside, was installed. This proved very useful in giving "pep" talks to the public, and it was surprising the result it had when suitable messages were given to the public in the street. Immediately large numbers flocked into the hall, and by this means we were able to keep up our attendances.

Meter reading competitions were conducted twice daily. These were open to all children under 14 years of age, and they were allowed six minutes in which to read three gas and three electricity meters. To the first correct or nearest solution opened at each session a War Savings Certificate was given. The meters were changed after each competition, and the winners were not allowed to enter again. This competition aroused very great interest, even between parents, who, though they were ineligible, vied with each other, and some amusing results were obtained.

We were fortunate in having the Minister of Fuel, Major Lloyd George, to conduct the opening ceremony.

There has been erected in the most prominent position in the town an adjustable scale, approximately 15 ft. high, showing the comparative monthly fuel consumption for 1941 and 1942. This started for the month of August and will extend over twelve months. The saving so far is gratifying.

	1941.	1942.	Saving.	% saved.
August	8,086 tons	6,733 tons	1,353 tons	16¾%
Sept.	8,796 „	7,302 „	1,494 „	17%

We are greatly indebted for the help given by Mr. Lucas and the staff of the B.C.G.A.

It is, continued Mr. Smith, necessary that there be complete co-operation between the gas and electricity undertakings, and I suggest

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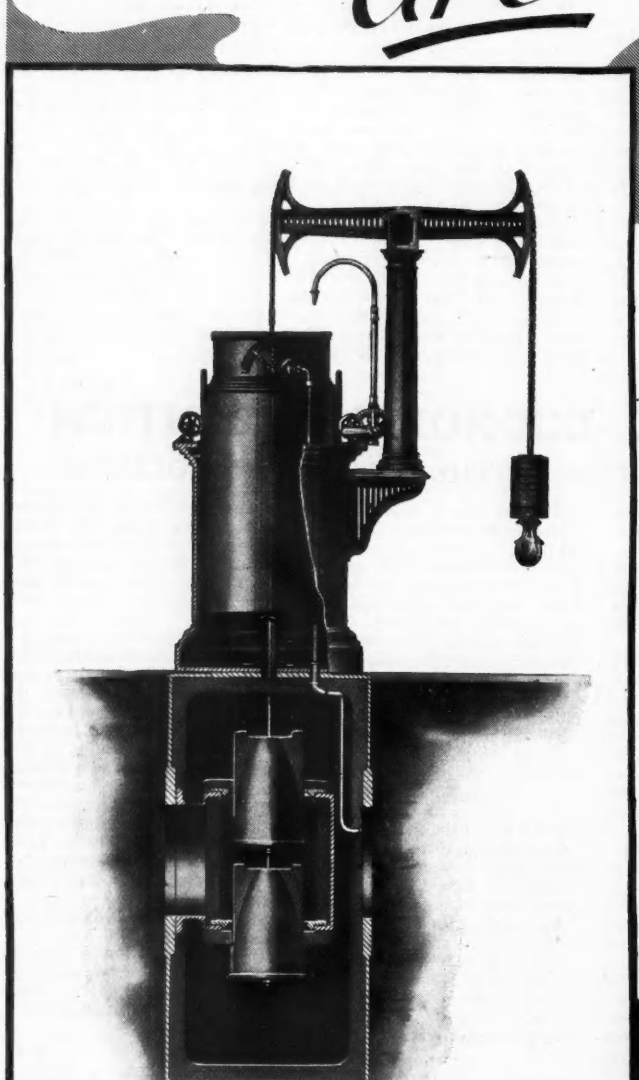

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that every effort be made to hold the exhibition away from either undertaking's premises and that any subsequent references made regarding the result of savings in fuel be given in the form of the common fuel—coal. Where possible, I advise holding the exhibition in a large store. Such stores are finding it increasingly difficult to stock their large premises, and I think that the majority of store managers would welcome an exhibition which is so topical. There are several advantages to be gained from such sites. The stores which have been established for many years have an appeal to very large numbers. This would be the means of getting the story home to the greatest number of people. At the same time, the large stores are usually large Press advertisers, and the goodwill of the manager would ensure adequate Press write-ups, which are very desirable. I also suggest that full use be made of as many shop windows in the town as possible.

It is important to build the fuel exhibition around an objective, and that must be to "save fuel." We are asked to appeal to the domestic consumer, and therefore the story must be illustrated in a simple way, and must be non-technical.

The gas and electricity stand at Guildford just "told a story." I consider that we should have done better if we had linked our story with actual appliances. This was done on the solid fuel stand, and the interest was much greater. Movement in displays is always a sure way of attracting attention. Local factories engaged on the production of munitions might be invited to send a workman in overalls to tell the story of the important part fuel plays, and to emphasize the necessity for unlimited supplies of fuel for war factories. Approach all male and female service units in your area to send their cooks, to learn how to exercise fuel economy. I have heard that some towns have used the occasion of a fuel campaign for collections for charities. I feel that this is a mistake, as also are competitions in which an entrance fee is required.

We are talking of economy, therefore make your exhibition an austerity exhibition. Avoid using large quantities of other commodities that are useful to the war effort. Be careful that any functions, such as luncheons after the opening ceremony, are again austerity, available to only a few people, and if possible I would suggest that they be held in private rooms away from public attention.

Mr. **P. E. Browne** (Brighton) said they were about to stage a fuel economy exhibition at Brighton, and the organization had been entrusted to the public utility services—including water. And, though no mention had been made of water by Mr. Smith, he felt that the water authorities should play their part in connexion with fuel economy exhibitions and should link up with gas and electricity and, of course, solid fuel. Demonstrations, presumably cookery demonstrations, had been mentioned. It had been decided not to have any cookery demonstrations at the Brighton exhibition, for it was felt that such demonstrations could not convey much information in the course of a few minutes with people passing through the exhibition. He thought Guildford was wise in selecting premises unconnected with either the gas or the electricity undertaking, but supported by what might be termed local effort. Brighton gas supply covered five towns, and it had been arranged for each town to tie up, through its showroom display, with the central effort in the fuel exhibition. The choice of hall for such an exhibition was a most important consideration, and preferably it should be one in which artificial lighting was not needed. And he thought that "spread luncheons" were not in keeping with economy exhibitions.

Mr. **R. V. Scott** (Canterbury), on the question of "to lunch or not to lunch," said that at Canterbury they had decided to have a lunch at a British Restaurant to mark its inauguration. He agreed that at exhibitions moving exhibits were desirable. For the Canterbury fuel economy exhibition he had, through a friend, arranged for a vivid display with the motif "Keep the main lines clear," for which his friend was loaning model locomotives and track. Then the electricity undertaking was staging an electric meter exhibit with moving dials driven by a gramophone motor, the idea being to have spot meter readings taken by householders and not, be it noted, by children. Could not some ingenious person, asked Mr. Scott, arrange for a moving gas meter dial system on similar lines?

Mr. **Braidwood** (Southend) suggested that appeal for fuel economy should be addressed not only to domestic consumers but also to industrial users and shops, hotels, and so on. Some hotels were bad offenders.

Mr. **E. E. Calvert** (Gas Light and Coke Company) thought that appeals for saving should be addressed not only to the individual who paid directly for his fuel, but to the people who were responsible for the use of fuel but who did not actually pay the bill direct.

Mr. **J. H. Hornby** (Hastings) said they had decided not only to cut out a luncheon but also to cut out an exhibition. They were of opinion that it would be more useful to spread their fuel economy efforts over the winter months rather than concentrate on one show. Concerning demonstrations, his experience was that, nowadays at any rate, those who attended demonstrations were "regulars" and that little was to be gained from them. Situated as he was, he had ceased to hold demonstrations.

Colonel **H. W. Woodall** (Regional Fuel and Power Controller, London and South-Eastern Region) said it was unfortunate for the Minister of Fuel and Power that he should have to embark on his campaign at a period of rising demand due to the advent of the colder months; but he had to decide on a target figure, and how could he base his judgment? Everybody was anxious to know whether he would be warm in the coming winter, and it was a fact that people were buying wood, and peat, and coal, and storing these fuels against the winter. He knew of someone with an all-gas house who was buying all these fuels and was stocking them, and in the meantime was consuming gas to conserve these stocks. People were deliberately using gas to conserve coal, and therefore statistics of saving in coal could be misleading and did not constitute a true barometer of the actual situation. As he had said, a basis of saving was needed, and to his mind gas was a truer basis than coal. There was another aspect. In two large towns which he named the prepayment consumption amounted to 75% in one case and 65% in the other. In the smaller houses the income had greatly increased since the war, speaking generally. Incomes of from £14 to £20 a week were not uncommon, and with the money available the people were putting more in their gas meters, for, while most other commodities were rationed, fuel was not.

Mr. **W. A. Howie** (Maidstone) said that for some reason or other people congregated in narrow streets, and for the fuel economy exhibition in Maidstone they had decided on a shop in a narrow street. Regarding rationing, his experience was that with fuel on tap or switch, and without rationing, people would in practice turn on the tap or the switch.

Mr. **H. J. Randall** (Yorktown) queried whether, in the organizing of fuel exhibitions, the coal interests were pulling their due weight.

Mr. **Nicholas,** replying to the discussion, said his experience was that, while the ordinary quarterly consumer was definitely using less gas, the prepayment user was equally definitely using more.

Mr. **Smith,** also replying, mentioned that the demonstrations at the Guildford exhibition were concerned solely with advice on fruit bottling and on haybox cookery. The demonstrations were given, not on a platform formally, but in the body of the hall, and they certainly proved a popular feature. In regard to meter reading, he felt that children could take an interest in and read the gas meter, and could, by regular readings, help their parents. The exhibition had centred only on domestic consumption, and no "story" was told to industrial users. In their normal work the Undertaking had been at pains to impress upon works managements the need for fuel economy and had visited them for the purpose.

Reducing the "Unaccounted-for"

"Unaccounted-for gas" has had to be allowed for ever since gas distribution commenced, and every distribution engineer is familiar with the annual cost of this lost effort. Nowadays all available means for reducing this loss merit close attention, not only in saving fuel, but in the avoidance of tearing up roads and other surfaces to recaulk pipe joints which have failed. Losses are naturally greater in those areas where there are excessive surface vibrations and earth subsidence. Vibration tends to increase in the present emergency on account of transport by unusually heavy vehicles and the inability of local authorities to maintain surfaces in the best condition.

It has been stated that no lead joint is "absolutely and perfectly" tight, but in every distribution system there are numbers of joints which are "practically" tight. There are large numbers of joints having leaks of greater or lesser magnitude, all of which go to swell the total "unaccounted-for gas." A "distinctly perceptible" leakage can conservatively be assumed as 0·5 cu.ft. per hour, or 4,380 cu.ft. per annum, representing the product of about 6 cwt. of coal.

It is claimed that one of the leading appliances at present designed to reduce the "unaccounted-for" loss is the Dresser Adjustable Leak Clamp (Consolidated Pneumatic Tool Co., Ltd.). It comprises a series of metal segments placed round the spigot and socket of the joint holding in a state of compression a special compound gasket against the existing caulked joint. The effect is that the gasket prevents leakage beyond the caulking material. The clamp is adjustable to meet varying sizes of cast iron and steel mains. It is not new—there are many miles of mains already so fitted—and the "unaccounted-for gas" has been reduced very considerably. An added advantage is that once fitted to a newly caulked joint the main can be left almost indefinitely without attention, a distinct saving when the cost and inconvenience of opening the surface for repairs is considered. The first cost of the adjustable leak clamp is very reasonable: its cost, the makers claim, is offset in a short period by the absence of leakage, and the clamp can be fitted by unskilled labour using an ordinary spanner. Present standard sizes readily obtainable, of which thousands have already been fitted, range from 3 in. to 48 in. diameter.

Voluntary Contributions to local charities by means of weekly deductions from wages, by employees of Messrs. Alder & Mackay, Ltd., amounted, for the year to Sept. 30, to £204 12s. 7d.

In a British Restaurant opened in Andover on Oct. 8 all the cooking apparatus, except a hotcloset obtained from the Ministry of Food pool, was supplied by the Andover Lighting and Power Company. It included an "Eagle" solid fuel range with Fletcher Russell gas burner equipment; a "Star" portable boiler with gas burner equipment; and gas roasting oven, vegetable steamer, and tea water boiler.

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Gas Products Prices

The London Market Oct. 19.

The only item of interest in connexion with the London Coal Tar Products market is that fair quantities of Pitch are being sold on the basis of 45s. per ton naked at Makers' Works. Otherwise no change.

The Provinces Oct. 19.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 1s. to 1s. 4d. according to quality. Solvent naphtha, naked, North, 2s. 2d. to 2s. 6d. Heavy naphtha, North, 1s. 10d. to 1s. 11d. Carbolic acid, 60's, controlled by the Coal Tar Acids Prices (Inland) Order, 1942, operative from May 1. Naphthalene, controlled by the Naphthalene prices (Inland) Order, 1942, dated April 15, 1942, and operative from May 1, 1942, £19 to £19 10s.—bags free. Anthracene, controlled by the Anthracene Prices (Inland) Order, 1942, operative from May 1. Filtered heavy oil (min. gr. 1,080), 7½d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5¼d; timber preservation and other purposes 4¾d. to 6d. These prices apply as from May 13.

*In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland Oct. 17.

Prices of Naphthas and Xylols will be controlled shortly. Refined tar controlled. Value is 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6¾d. to 7d.; low gravity, 7¼d. to 7½d.; neutral oil, 6¾d. to 7d. per gallon; all *ex* Works in bulk. Refined cresylic acid is difficult to secure at 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha: 6½d. to 7d. Solvent naphtha: 90/160 grade, 2s. 3d. to 2s. 6d. and 90/190 Heavy naphtha, 1s. 9d. to 2s. per gallon. Pyridine: 90/160 grade, 13s. and 90/140 grade, 15s. per gallon.

Gas Stocks and Shares

The Stock Markets generally were not quite so active as the previous week when it will be remembered markings reached a record, but the tone was firm at the close. There was a good demand for home rails, while among industrials iron and steel shares received good support. The volume of business in Gas stocks and shares, on the other hand, was, if anything, a little heavier than a week ago, and apart from the fall in the Mediterranean stocks price changes, though few, were in an upward direction. Gas Light units went ahead again and doubled the previous week's gain, closing 6d. higher at 14s. 4d. A feature was the sharp rise of 2s. 6d. in Gas Consolidation "A" stock in the Supplementary List.

The following quotations were changed during the week:

OFFICIAL LIST		
Alliance & Dublin	95—100	+2
Cardiff	101—106	+1
Gas Light Units	14/—15/-	+-/6d.
Ditto 4 p.c. Pref.	68—73	+1
Imperial Continental	67—72	+1
Mid-Southern Utility 4 p.c. Pref. ...	79—84	+1
United Kingdom Gas Corporation 4 p.c. 1st Cum. Pref.	18/—20/-	+-/6d.
SUPPLEMENTARY LIST		
Gas Consolidation "A" ...	15/—17/-	+2s. 6d.
Malta & Mediterranean 7 p.c. Non-Cum. 1st Pref.	30—40	−15
Ditto 7½ p.c. Non-Cum. 2nd Pref....	30—40	−5
PROVINCIAL EXCHANGES		
Liverpool Ord.	98½—100½	−1½
Weston-super-Mare Cons.	95—100	+2½
Ditto 7½ p.c. Deb.	142—147	+4

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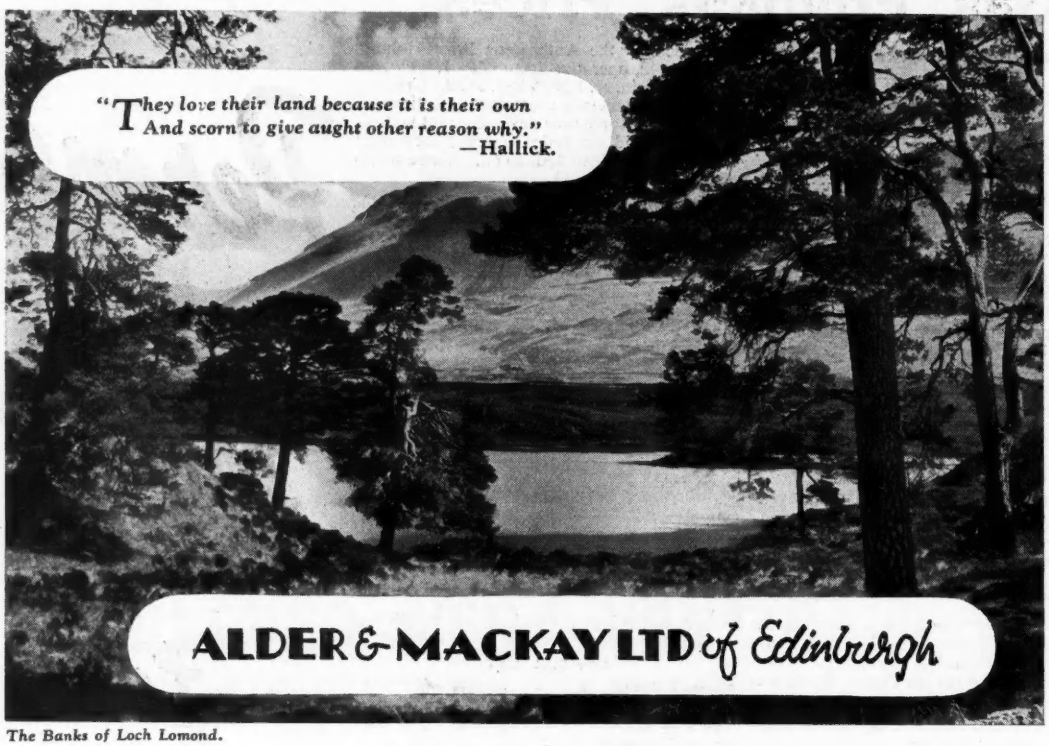
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And scorn to give aught other reason why."
—Hallick.
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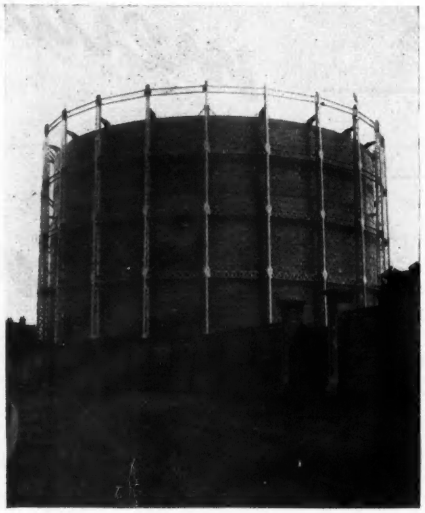

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CONTENTS

EDITORIAL NOTES

Coke Sizing 121
Research Associations . . . 121
A Training College 122
Hygiene and Flueless Rooms . . 122
Research on Coke 123
Parental Interest 123
Obituary 123
Letters to the Editor 123
Institution of Gas Engineers . . 124
Midland Association 124
An Urgent Need 124
Potato Demonstrations 124
Scottish Junior Association (Eastern District) 124
Problems of To-day and To-morrow. By A. H. Cranmer . . . 127
Standardization of Appliances . . 128
Ventilation and Hygiene . . . 135
Gas Products and Prices . . . 136
Gas Stocks and Shares . . . 136

THIS WEEK'S ADVERTISERS

	PAGE
Alder & Mackay, Ltd.	134
Averill, C. R., Ltd.	110
Bale & Church, Ltd.	S4
Blakeley, Firth, Sons & Co., Ltd.	S4
Boulton Tubular Structures, Ltd.	S2
British Fittings Co. (Hendon), Ltd.	S2
British Gas Purifying Materials Co., Ltd.	S4
Brotherhood, Peter, Ltd.	119
Clayton, Son & Co., Ltd.	108
Cowan, W. & B.	Cover III
Danks of Netherton, Ltd.	S3
Dempster, R. & J., Ltd.	107
Dempster, Robert, & Sons, Ltd.	126, S4
Donkin Co., Ltd. (The Bryan)	Cover II
Ellison Insulations, Ltd.	S4
Ether, Ltd.	112
Gas Meter Co., Ltd.	Cover IV
Gas Purification and Chemical Co., Ltd.	S4
Gibbons, Bros., Ltd.	111
Glover, Thos., & Co., Ltd.	120
Grant & West, Ltd.	S4
Harris & Pearson, Ltd.	Cover IV
Harrisons (London), Ltd.	S4
Hilmor, Ltd.	S2
Holmes, W. C., & Co., Ltd.	S5
Horden Collieries, Ltd.	108
Humphreys & Glasgow, Ltd.	118
Jeavons, E. E., & Co., Ltd.	S4
Jenkins, W. J., & Co., Ltd.	Cover I
Keith Blackman, Ltd.	S6
Keith Piercey, Ltd.	109
Kirkham, Hulett & Chandler, Ltd.	113
Main, R. & A., Ltd.	132
Mavitta Drafting Machines, Ltd.	S3
Menno Compressed Air Greasecup Co., Ltd.	S3
Mewburn Ellis & Co.	S4
New Bowson Coal Co.	S3
Parkinson Stove Co., Ltd.	129
Parkinson W., & Co.	120
Pass, E., & Co.	110
Peckett & Sons, Ltd.	S3
Peebles & Co., Ltd.	115
Pegson, Ltd.	Cover II
Radiation, Ltd.	130, 131
Reavell & Co., Ltd.	S3
Russell, R., & Sons, Ltd.	108
Saunders Valve Co., Ltd.	S3
Spencer (Melksham), Ltd.	112
Sternol, Ltd.	115
Strachan & Henshaw, Ltd.	S4
Sutherland Meter Co., Ltd.	116
Trotter, Haines & Corbett, Ltd.	S4
Visco Engineering Co., Ltd.	S6
Wakelin, F. H., Ltd.	S4
Walker, C. & W., Ltd.	116
West's Gas Improvement Co., Ltd.	S1
Willey & Co., Ltd.	114
Williamson Cliff, Ltd.	Cover IV
Wilson (George) Gas Meters, Ltd.	117
Woodall-Duckham Co., Ltd.	125
Wright, Alex., & Co., Ltd.	134
Trade Cards	136
Appointments Vacant	S4
Patents	S4
Plant, &c.	S4
Plant, &c., for Sale and Wanted	S4
Publications	S4

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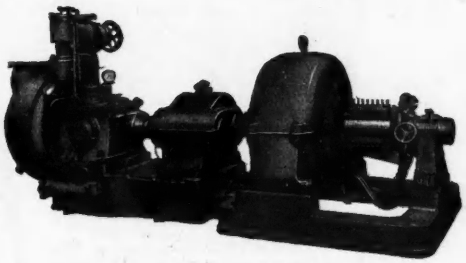

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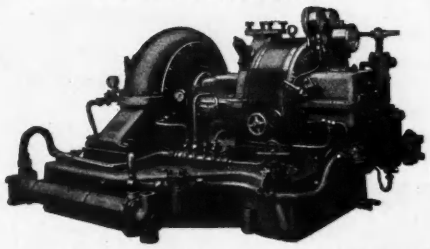

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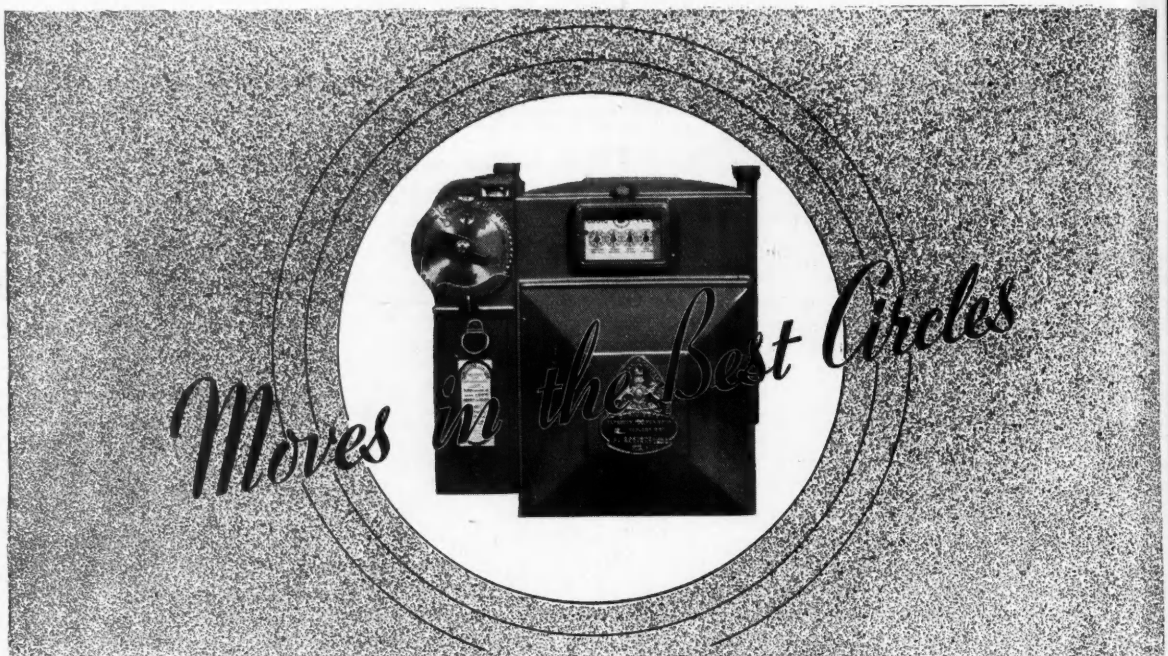

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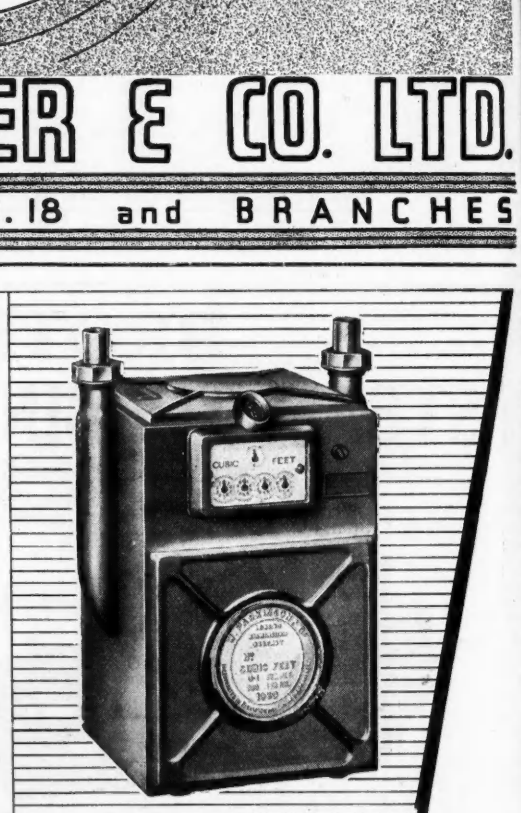

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